

REMARKS

Claims 1-32 are currently pending in the application. In an Office Action dated September 27, 2004 ("Office Action"), the Examiner required addition of a "Prior Art" label to Figures 1-2B and 8A-B, objected to claim 31 because of an antecedent-basis problem, rejected claim 1 under 35 U.S.C. § 102(e) as being anticipated by Stasiak, U.S. Patent Application Publication No. 2003/0230746 A1 ("Stasiak"), and rejected claims 1-32 under 35 U.S.C. § 102(e) as being anticipated by Krieger et al., U.S. Patent Application Publication No. 2004/0159835 A1 ("Krieger"). Applicants' Representative has included corrected versions of Figures 1-2B and 8A-B, and has amended claim 31 to address the Examiner's objection. Applicants' Representative respectfully traverses the 35 U.S.C. § 102(e) rejections of claims 1-32.

With regard to the rejection of claim 1 by Stasiak, 35 U.S.C. § 102(e) explicitly designates as prior art a published patent application filed in the United States before the invention by the Applicant for the patent potentially anticipated by the published patent application. Applicants' Representative includes a Rule 131 Affidavit in which Applicants attest to an invention date of no later than July 30, 2002. The Rule 131 Affidavit is supported by the disclosure form furnished by Applicants to in-house counsel at the Hewlett-Packard Company. Applicants' Representative respectfully submits that Stasiak is not citable against the current application under 35 U.S.C. § 102(e).

With regard to Krieger, Applicants' Representative respectfully observes that the publication date for Krieger is August 19, 2004, more than one year after filing of the current application. Therefore, like Stasiak, Krieger is not available as a prior-art reference under 35 U.S.C. § 102(e). However, Krieger is a continuation-in-part application of Krieger, et al., PCT/RU01/00334, filed on August 13, 2001 ("Krieger Parent"). The Krieger Parent was published as US Patent Application Publication No. 2004/0246768 A1 ("Parent Publication"). Only information disclosed in the Krieger Parent, or Parent Publication, may cited against the current application. Applicants' Representative includes copies of both the Russian-language version of the Krieger Parent, as well as the Parent Publication.

The majority of the disclosed information in Krieger is new matter. In particular, all of the figures in Krieger are new matter, and are not found in the Krieger Parent. Paragraphs [0001] - [0007] of Krieger are entirely new matter. Significant new matter has been introduced into paragraphs [0010], [0011], [0029], and other paragraphs. Paragraph [0013] also appears to be entirely new. Almost all of the material following paragraph [0036], including paragraphs [0037]-[0047], and subsequent paragraphs appear to be entirely new matter.

Most of the Examiner's arguments in support of the 35 U.S.C. § 102(e) rejection of claims 1-32 by Krieger cite the figures of Krieger and paragraphs of Krieger that either include new matter or that are entirely new matter. Therefore, most of the Examiner's 35 U.S.C. § 102(e) arguments in support of rejection claims 1-32 by Krieger are unfounded, referring to subject matter not citable under 35 U.S.C. § 102(e). In the following paragraphs, Applicants' Representative endeavors to contrast the currently claimed invention from the material disclosed in the Krieger Parent, to facilitate the Examiner's analysis of the Krieger Parent for preparation of a subsequent Office Action.

First, it should be noted that the Krieger Parent discusses only a memory cell, and not memory elements of larger, two-dimensional or three-dimensional arrays of memory elements. The Krieger Parent application discusses the disclosed memory cell as consisting of two electrodes with a functional zone between them (Parent Publication, [0017]). There is, however, no discussion of signal lines in the Krieger Parent, i.e. conductive components of a larger, multi-memory-element device.

Next, it should be noted that the Krieger Parent discloses little information related to the functional zone between electrodes, and, in particular, discloses little information regarding the nature of the electrical-resistance changes induced in the functional zone by applied voltages and discloses almost nothing about specific functional-zone materials, apart from a reference to poly-diphenylacetylene. Although the discussion of the functional zone, beginning in paragraph [0019] of the Parent Publication, provides little detailed information, it is clear that the functional zone is thought, by the inventors, to operate by mass movement of atomic or molecular ions, or within the functional zone under applied electrical fields. Moreover, as discussed

beginning in paragraph [0022] of the Parent Publication, the functional zone is proposed to include passive and barrier layers, with high electron conductivity and low ion conductivity, to constrain mass movement of charged ions.

By contrast, as clearly claimed in claim 1 of the current application, the current invention is directed to a memory element containing an organic polymer layer that transitions between two different, detectable memory states that arise from changes in chemical bonds or changes in organic polymer doping within the organic polymer layer. A detailed discussion of certain of these mechanisms begins on line 6 of page 9 of the current application, with reference to Figure 9. Applicants' Representative can find no discussion, in the Krieger Parent, of functional zone transitions between memory states due to changes in chemical bonds or to changes in organic-polymer doping. Changes in organic-polymer doping affect the electronic states of organic polymers, thereby effecting changes in the electrical resistivity of the organic-polymer layer. This is not equivalent to bulk flow of electrically charged ions within the functional zone, intimated in the Krieger Parent as the underlying mechanism for changing resistivity of the functional zone. For example, the Krieger Parent suggests that bulk flow of charged ions or charged metal clusters changes the active layer resistance and/or form high conductivity areas or lines in the active layer under external electric and/or light radiation (bottom of paragraph [0019] of the Parent Publication).

In summary, Stasiak is not available, under 35 U.S.C. § 102(e), as a citable reference. Krieger is also unavailable, under 35 U.S.C. § 102(e), as a citable reference, except for material in Krieger previously disclosed in the Krieger Parent or Parent Publication. The vast majority of the disclosure in Krieger is, in fact, new matter, and cannot be cited against the current application. The Krieger Parent discloses a memory cell, rather than a memory element, with a functional zone including an active layer that exhibits changes in electrical resistivity due to mass flow of charged ions and metal clusters within the active layer to produce conducting channels. By contrast, the currently claimed invention relates to a memory element comprising overlapping conductive signal lines and an organic polymer layer within the region of overlap between the signal lines that exhibits detectable memory states, transitions between

which arise from changes in chemical bonds or levels of organic polymer doping in the organic polymer layer. Applicants' Representative respectfully suggests that, while the Krieger Parent or Parent Publication is available under 35 U.S.C. § 102 as a citable reference, the Krieger Parent discloses a memory cell unrelated to the memory element to which the current claims are directed, and does not anticipate the currently claimed invention.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,
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AMENDMENTS TO THE DRAWINGS

Figures 1-2B and 8A-8B have been amended to be designated by the
legion – Prior Art --